Configuring the Cisco NI-1 DLSAM Equipment Module

The Cisco 6100/6130 NI-1 DSLAM Equipment Module supports provisioning of cross connections on Cisco 6100/6130 NI-1 DSL access concentrators. The Cisco 6100/6130 DSL access multiplexer (DSLAM) is an ATM cell switch that multiplexes traffic from subscriber ports to a single ATM WAN port. Its 32 slot multiport line-card architecture can support ADSL and SDSL technologies.

Supported Configurations

Two configurations are possible with this system:

- Subscriber Connection Configurations
- Subtending Configurations

Subscriber Connection Configurations

Subscriber Connection configurations include the following:

- Direct Connect Configuration.

  This involves connecting one subscriber directly to a modem (ATU-C or STU-C). Traffic is multiplexed from up to 64 ADSL or 128 SDSL subscriber ports to a single ATM WAN port.

- Digital Off-Hook Configuration (DOH).

  This configuration uses a combination of a Multiplexer Chassis (MC), Line Concentration Chassis (LCC), and POTS Splitter Chassis (PSC) to provide the highest subscriber concentration. This configuration uses ADSL technology to support up to 400 ADSL users through 64 ADSL modem ports, allowing connections to be made when they are needed (i.e., dial up). If a connection is not established, the central office modem resources are made available to another CPE.

Subtending Configurations

Subtending Configurations include the following:

- Non-subtended Network Configuration.

  Allows individual DSLAMs to be directly linked to the WAN via a trunk that comes from the WAN port.

- Subtended Network Configuration.

  Allows up to seven Cisco 6100/6130 chassis to be linked to a single WAN trunk. Subtending is supported in both Direct Connect and DOH configurations.

Supported Equipment

The following summarizes the interface cards, line cards and CPEs supported by this Equipment Module:

Network interface cards:

- Cisco 6100 DS3 NIM (6100NIM-1-DS3-2)
- Cisco 6100 DS3 NIM (1xDS3 NI1)
- Subtend Host Module DS3 (2xDS3 SHM)

Line Cards:

- 6100 Quad DMT issue 2 ATU-C (ATU-4-DMT-DIR-1)
- 6100 Quad 2B1Q STU-C-direct connect (STUC-4-2B1Q)
- Two port ADSL card with CAP modulation (2xCAP)
- Two port ADSL card with DMT2 modulation (2xDMT2)
- Four port SDSL (4xSDSL)
- Four port ADSL card with DMT2 modulation (4xDMT2)
- Four port ADSL card with DMT2 (with or without G. Lite) or CAP modulation (4xFLEX)

CPEs (modems and routers at the customer site):

- Serial SDSL Data Service Unit (Cisco 633)
- SOHO/Telecommuter ADSL Router (Cisco 677)
- SOHO/Telecommuter ADSL Router (Cisco 675e)
- SOHO/Telecommuter ADSL Router (Cisco 675)
- SOHO/Telecommuter ADSL Router (Cisco 673)
- ATM-25 ADSL Modem (Cisco 627)
- Personal PCI ADSL Modem (Cisco 605)

The Equipment Module is configured using an SNMP protocol based command interface as well as information contained in the MIB. The software requirements are outlined in Table 6-1:

Table 6-1   Software Requirements

Vendor	Product	Version(s)
Cisco	DSLAM Software	2.4.1
Cisco	DSLAM Software	3.0.0

> **Note**   In order to configure the NI-1 DLSAM Equipment Module you must have installed it during the CPC Server and Client installation procedures. For more information about installing CPC, refer to the chapter titled "Initial Installation" in the *Cisco Provisioning Center Installation and Administration Guide.*

Summary of Configuration Tasks

To configure the Equipment Module to make CPC operational, you must complete the following steps:

Step 1   Network Timeout.

Step 2   Initial system upload.

Step 3   Re-upload (if configuration information has changed).

Step 4   Add inter-network links (topology) information.

Step 5   Configure Service element profiles.

Network Timeout

The NI-1 DLSAM Equipment Module implements an overall timeout for service provisioning transactions. There are two environmental variables that define the Network Timeout. These are CCP_ACTIVATION_TIMEOUT (Default=120 seconds) and CCP_RESET_TIMEOUT (default= 300 seconds); they define the maximum interval (measured in seconds) allowed for each Service element activation and for the rollback of each Service element, respectively. The maximum interval must amount to the maximum time to elapse before the NIF times out. For example, if CCP_ACTIVATION_TIMEOUT=180, this allows the NIF three minutes to activate an item in a Transaction.

Default settings are used if the NIF detects that these variables are not set in the environment.

Network timeout requires shutting down the server if it is not already down, setting the variables and then restarting it to pick up the environment changes.

To set the CCP_ACTIVATION_TIMEOUT environment variable:

Step 1   Shut down the CPC server by issuing the following command:

```
SYnpt -h
```

Step 2   Set the environment variable to an integer (measured in seconds) that amounts to the maximum time to elapse before the NIF times out:

```
export CCP_ACTIVATION_TIMEOUT=180
```

To set the CCP_RESET_TIMEOUT environment variable:

Step 3   Set the environment variable to an integer (measured in seconds) that amounts to the maximum time to elapse before the NIF times out:

```
export CCP_RESET_TIMEOUT=180
```

Step 4   Run the following commands in succession to source the Server environment and start the CPC Server:

```
cd /opt/SY/Activator/Server/mng/utility
.  syccpovdef
SYnpt -sS
```

Initial System Upload

In order to provision services, the CPC database must have detailed knowledge of the managed subnetworks. Using a procedure called upload, objects are created within the CPC database that represent objects of the managed network.

Note   The term upload does not refer to the creation of inter-network links because they are outside the scope of any single Equipment Module. For more information on adding inter-networking links, see the section titled "Adding Inter-Network Links (Topology) Information" in this chapter.

CPC supports the following types of upload:

- fabric (nodes, DSL physical ports, WAN physical ports, WAN subtending ports, ATM logical ports)
- Service (ATM cross connections)
- fabric and Service (all)

For the Cisco 6100/6130 NI-1 Equipment Module you can upload many nodes at once (network upload) or an individual node at a time. CPC supports the following upload scenarios:

- Given a network object, upload just the fabric elements for the nodes in that network.
- Given a network object, upload just the Service elements for the nodes in that network.
- Given a network object, upload all the fabric and Service elements for the nodes in that network.
- Given a node object, upload just the fabric elements for that node.
- Given a node object, upload just the Service elements for that node.
- Given a node object, upload all fabric and Service elements for that node.

Note   The upload function takes precedence over any Transactions that are running at the time of upload. If the upload function makes a change back to the fabric that affects a running Transaction (such as deleting a logical port that the Threader has decided to use) then this Transaction fails and must be restarted.

Network and node objects must be created in order to perform an **Upload**.

Before You Upload: Creating a Network Object

One network object must be created for each network. The following steps explain how to create a network object.

Step 1   From the Root Tree Viewer choose **Network Admin** > **IntraNetworking** > **Cisco NI1 DSLAM Network.**

Step 2   Click the **Object Viewer** button on the toolbar.

Step 3   Enter the attribute values under the **Common Attributes** and **Common Parameters** tabs. Refer to Table 6-2 for attribute information.

Step 4   Save and apply the network object by clicking the **Save** and **Apply** buttons.

Table 6-2 lists the attributes for a Cisco 6100/6130 network object. Attributes with an asterisk "*" next to their Default Value indicates that these fields cannot be changed.

Table 6-2   Cisco 6100/6130 Network Object Attributes

Attribute	Description	Acceptable Values	Default Value
Common Attributes			
Name	The network name. (Mandatory)	Text string (up to 64 characters)	
Customer	The customer name.	Text string (up to 16 characters)	
Domain	The domain name.	Text string (up to 16 characters)	
Common Parameters			
Containing Network	This is the name of the network of which this network object is a subnet (optional).	Text string (up to 32 characters)	
Transit Cost	This is the cost of crossing the sub-network. This attribute is used by the Threader to determine the lowest cost path when threading a service. (Mandatory)	0-2147483647	500
Class	The CPC class name for the network object.		C1nt*
Opaque	The threading strategy (opaque or transparent).	True, False	False*
Use Backup EMS	Specify whether or not to use a backup EMS. Disabled (False) to use the primary EMS. Enable (True) to use the backup EMS.	True, False	False*

Table 6-2   Cisco 6100/6130 Network Object Attributes (continued)

Attribute	Description	Acceptable Values	Default Value
Resource Map	This attribute is an integer used to carry a bit map of services supported by this network.	0-2147483647	0
Pre-provisioned	Not supported in this release.	Full, Init, None	None*

Creating a Node Object

You should create node objects for all Cisco 6100/6130 nodes in the network. The following steps explain how to create a node object.

Step 1 From the Root Tree Viewer choose **Network** > *Cisco NI1 DLSAM Network Name* > **Cisco NI1 DLSAM Node.**

Step 2 Click the **Object Viewer** button on the toolbar.

Step 3 Enter the attribute values under the **Common Attributes** and **Common Parameters** tabs. Refer to Table 6-3 for attribute information.

Step 4 Save and apply the node object by clicking the **Save** and **Apply** buttons.

Table 6-3 lists the attributes for a Cisco 6100/6130 network object. Attributes with an asterisk "*" next to their Default Value indicates that these fields cannot be changed.

Table 6-3   Cisco 6100/6130 Node Object Attributes

Attribute	Description	Acceptable Values	Default Values
Common Attributes			
Name	The node name. This attribute is mandatory.	Text string (up to 64 characters)	
Customer	The customer name.	Text string (up to 16 characters)	
Domain	The domain name.	Text string (up to 16 characters)	
Network	This is the network that contains the node. This field is auto-generated in the Object Viewer.	Text string (up to 32 characters)	*
Management Address	The IP address or symbolic name for the primary system controller.	Text string (up to 32 characters)	

Table 6-3   Cisco 6100/6130 Node Object Attributes (continued)

Attribute	Description	Acceptable Values	Default Values
Transit Cost	This is the cost of crossing the sub-network. This attribute is used by the Threader to determine the lowest cost path when threading a service. (Mandatory)	0-2147483647	1000
Node Type	This specifies the equipment type.	Text string (up to 24 characters)	CiscoDSLAM6100/6130
Class	The CPC class name for the node object.		C1nd*
Containing Region	The name of the administrative area containing the node (a LATA, for example).	Text string (up to 32 characters)	
Geographical Location	This is the geographical location of the node (for example, a GPS reference).	Text string (up to 32 characters)	
Organizational Location	This is the organizational location of the node (for example, a Cisco 6100 directory reference).	Text string (up to 64 characters)	
Pre-provisioned	Not supported in this release.	Init, Full, None	None*
Cisco SNMP			
Connection Mode	Specifies whether this switch is configured for a direct or pooled connection mode.	Direct, Pooled	Direct
SNMP community name	SNMP community string for accessing the MIB (public for read and private for write).	Text string (up to 32 characters)	private

Table 6-3   Cisco 6100/6130 Node Object Attributes (continued)

Attribute	Description	Acceptable Values	Default Values
Version	The SNMP version being used (in the form of XXXX-XXX-XXR where X is a numeric digit and R is a R is a revision letter. This attribute is usually uploaded.	Text string (up to 32 characters)	*
Cisco 6100/6130 (Systemwide ATU-C CAP settings)			
Allow 136kbaud	This controls the ability of the modems to train with a rate that uses 136K baud. When enabled, modems are allowed to train subscribers using 136K baud. When disabled, modems will not train using 136K baud. If subscribers are provisioned for a rate that requires 136K baud and the value of this object is disabled, then the modem will train the subscriber to the closest rate that does not use 136K baud. This attribute only applies if version 2.4.1 of the DSLAM software is being used.	Enabled, disabled	Disabled
Allow non-timer CPE trains	Specify whether or not to enable non-timer CPE trains. This attribute only applies if version 2.4.1 of the DSLAM software is being used.	Enabled, Disabled	Disabled

Network Upload

Uploading the Fabric and Service Elements for a Network Object

You can upload the fabric and Service elements for a network object by completing the following steps:

Step 1   From the Root Tree Viewer choose **Network** > *Cisco NI1 DSLAM Network Name*.

Step 2   Select **Upload Both** from the **Element** menu. The upload begins.

When the upload is complete, an upload status window will display. If there were errors during the upload they would appear in this window.

Uploading the Fabric Elements for a Network Object

Given that the network object is in place, you can now upload fabric. Uploading network fabric creates the node objects corresponding to the specified network. Any fabric element contained by the nodes is also uploaded.

Step 1   From the Root Tree Viewer choose **Network** > *Cisco NI1 DSLAM Network Name.*

Step 2   Select **Upload Fabric** from the **Element** menu. The upload begins.

When the upload is complete, an upload status window will display. If there were errors during the upload they would appear in this window.

Uploading the Service Elements for a Network Object

After you have uploaded the fabric elements you can upload the services.

Step 1   From the Root Tree Viewer choose **Network** > *Cisco NI1 DSLAM Network Name.*

Step 2   Select **Upload Services** from the **Element** menu. The upload begins.

When the upload is complete, an upload status window displays. If there were errors during the upload they would appear in this window.

Uploading for Individual Nodes

Uploading the Fabric and Service Elements for a Node Object

After you create a node object, you may want to upload all of the fabric and Service elements for that node. The fabric elements for a Node object are the node itself, physical ports and logical ports. The Service elements are the objects used to create services (cross connections). Complete the following steps to upload the fabric and Service elements:

Step 1   From the Root Tree Viewer choose **Network** > *Cisco NI1 DSLAM Network Name* > **Cisco NI1 DSLAM Node** > *Node Name.*

Step 2   Select Upload Both from the **Element** menu. The upload begins.

When the upload is complete, an upload status window displays. If there were errors during the upload they would appear in this window.

Uploading the Fabric Elements for a Node Object

After you create a node object, you may want to upload just the fabric elements for that node. Complete the following steps to upload the fabric elements for a node:

Step 1   From the Root Tree Viewer choose **Network** > *Cisco NI1 DSLAM Network Name* > **Cisco NI1 DSLAM Node** > *Node Name.*

Step 2   Select the **Upload Fabric** from the **Element** menu. The upload begins.

When the upload is complete, an upload status window displays. If there were errors during the upload they would appear in this window.

Uploading the Service Elements for a Node Object

After you create a node object, you may want to upload just the Service elements for that node. Complete the following steps to upload the Service elements for a node:

Step 1   From the Root Tree Viewer choose **Network** > *Cisco NI1 DSLAM Network Name* > **Cisco NI1 DSLAM Node** > *Node Name.*

Step 2   Select the **Upload Services** from the **Element** menu. The upload begins.

When the upload is complete, an upload status window displays. If there were errors during the upload they would appear in this window.

Viewing the Upload Progress

Step 1   From the Root Tree Viewer choose **Upload Request** > *specific upload request* > **Upload Request Log** > *AuditLog.*

Step 2   Click the Log Viewer button on the toolbar. You will see a log containing details of the upload.

Re-Upload

To remain synchronized, the CPC database needs to be continually updated if changes are being made to nodes in the network. You should re-upload after any of the following scenarios:

- an existing node has been upgraded
- new hardware has been added to a switch
- you need to recover from a failure situation (to synchronize the database with the network)
- when Service elements are not updated by CPC (both for initial population of the database and also for co-existence with other provisioning products)

To re-upload you need to upload the fabric and Service elements for that node. For more information, refer to the sections "Uploading the Fabric and Service Elements for a Node Object" and "Uploading the Fabric Elements for a Node Object" in this chapter.

Working with Logical Ports

ATM logical ports can be created, modified, and deleted from DSL physical ports.

Creating Logical Ports

When creating a Cisco 6100/6130 ATM Logical Port, select an available DSL physical port (one whose **Interworking Model** is set to **None**). This ensures that the selected physical port is not being used by other network models. Ensure that the Maximum Connections field is set to 4 or less and update the other fields (such as Name) as necessary. To create an ATM logical port, complete the following steps:

Step 1   From the Root Tree Viewer choose **Network** > *Cisco NI1 DSLAM Network Name* > **Cisco NI1 DSLAM Node** > *Node Name* > **Cisco NI1 DSLAM ATM Logical Port.**

Step 2   Click the **Object Viewer** button on the toolbar.

Step 3   Fill in the attribute fields with the required values. Ensure that the **Maximum Connections** field is set to four or less, and update other fields as necessary. You must select a physical port to which the logical port belongs.

Step 4   Save and apply the network object by clicking the **Save** and **Apply** buttons.

Note   You must use the copy and paste mechanism when entering a value for the physical port that will contain the logical port. Manually entered physical port values are not supported.

Modifying Logical Ports

To modify an ATM logical port, complete the following steps:

Step 1   From the Root Tree Viewer choose **Network** > *Cisco NI1 DSLAM Network Name* > **Cisco NI1 DSLAM Node** > *Node Name* > **Cisco NI1 DSLAM ATM Logical Port >** *Logical Port name.*

Step 2   Click the **Object Viewer** button on the toolbar.

Step 3   Click the field(s) containing the attribute you want to modify and enter a new value.

Step 4   Save and apply the network object by clicking the **Save** and **Apply** buttons.

Deleting Logical Ports

Deleting an ATM logical port will delete an agent subscriber from the Cisco 6100/6130.

Step 1   From the Root Tree Viewer choose **Network** > *Cisco NI1 DSLAM Network Name* > **Cisco NI1 DSLAM Node** > *Node Name* > **Cisco NI1 DSLAM ATM Logical Port >** *Logical Port Name*

Step 2   Click the **Delete** button on the toolbar.

Step 3   Apply the Transaction by clicking the Apply button on the toolbar.

Naming Logical Ports

The Cisco 6100/6130 NI-1 Equipment Module allows the name of a logical port to be changed from the default name given by CPC when you save a logical port without naming it.

Equipment Module logical port names can be modified through the FTI or the GUI. The names can now be set to any combination of characters, and must be less than 33 characters. When this name attribute is modified, the Equipment Module verifies that the new name is unique within the containing node.

The name attribute is reset to its default when the user sets the name attribute to an empty string. The Equipment Module logical port name is stored in the CPC database as the attribute **srname**.

A Transaction must be opened to change the name attribute.

Adding Inter-Network Links (Topology) Information

After uploading new fabric elements and Service elements, you need to add extra topology information which the upload function is unable to determine (because the information is not known to the node). Topology information or inter-network links are outside the scope of the a single node or subnet manager and must be added manually through the CPC GUI or the FTI.

Links from subtended to subtending nodes in a subtending configuration must be added in the following manner.

Adding Links Using the GUI

Step 1   From the Root Tree Viewer choose **Network Admin** > **InterNetworking** > **Link.**

Step 2   Click the **Object Viewer** button on the toolbar.

Step 3   Enter the attribute values under the **Common Attributes**, **Contained By**, **LPort Association**, and **Link Parameters** tabs. For attribute information and detailed procedures, refer to Chapter 4, "General Functions and Features."

Step 4   Save and apply the link object by clicking the **Save** and **Apply** buttons on the toolbar.

Step 5   Repeat the above procedure to create each inter-networking link.

Working with Service Element Profiles

Service element profiles provide you with access to the Cisco-specific attributes for a particular Service element. There is a corresponding Service element profile for each Service element type that the node supports. Default profiles provide the initial (default) attribute values for the corresponding object class whenever such a new object is created.

For a given Service element, more than one profile may be defined. However, for a given object, only one profile may be associated at any one time.

Since profiles themselves are objects which you can create and modify, they provide a means to store and name commonly used sets of attributes and provide a reliable shorthand method of configuring any number of new objects. A profile has most of the same attributes as the corresponding object class. Some attributes of the object class are not included in the profile because they are expected to be unique for each object. For example, an object's name is not a profile attribute.

The attributes of a profile are referred to as initial value attributes because they are used to assign the initial values to the corresponding object. Once a new object has been created based on a profile, changes to profile attribute values do not cause any changes to the corresponding object. The only time the profile attributes affect the object is when you create a new object or when you reassign an existing object to the same or different profile.

For the Cisco 6100/6130 NI-1 Equipment Module, you can create Service element profiles for the following supported Service Elements:

- DSL Physical Ports
- ATM Logical Ports
- ATM-ATM Cross Connections

This section details the generic procedure for creating, modifying, and deleting Service element profiles, and then provides the specific configurable attributes for each Service element profile for this Equipment Module.

If you provide values for these attributes and also provide values in other places when you are creating a service (either during service creation or in a Service Object profile) the threader will override the values based on the following scale of priorities:

1. Service Object Viewer—All information provided in the Service object Subset Viewer is used by CPC.

2. Service object profile—CPC will only use the information provided in the Service object profile for values that are either not available or not specified in the Service object Subset Viewer.

3. Service element profile—CPC uses values from the Service element profile for all attributes that are not present or not specified in the Service object profile or the Service object Subset Viewer.

Creating a Service Element Profile

To create a Service element profile, complete the following steps:

Step 1   From the Root Tree Viewer choose **Equipment Module > Cisco NI1 DSLAM Equipment Module > Cisco NI1 DSLAM Node > Cisco NI1 DSLAM ATM-ATM Cross-Connect Profile.**

Step 2   Click the **Object Viewer** button on the toolbar.

Step 3   Enter the attribute values under the appropriate tabs. Refer to the attribute tables in this section for attribute information.

Step 4   Save and apply the profile object by clicking the **Save** and **Apply** buttons on the toolbar.

Modifying a Service Element Profile

To modify a Service element profile, complete the following steps:

Step 1   From the Root Tree Viewer choose **Equipment Module** > **Cisco NI1 DSLAM Equipment Module** > **Cisco NI1 DSLAM ATM-ATM Cross Connect Profile** > *Service Element Profile.*

Step 2   Click the **Object Viewer** button on the toolbar.

Step 3   Modify the values under the appropriate tabs. For attribute information, refer to the attribute tables in this section.

Step 4   Save and apply the network object by clicking the **Save** and **Apply** buttons.

> **Note**   Attribute fields in the Subset Viewer can be added, modified and deleted if required. Refer to the section Customization in   Chapter 3, "GUI Navigation," for more information on customizing the Subset Viewer.

Deleting a Service Element Profile

To delete a Service element profile, complete the following steps:

Step 1   From the Root Tree Viewer choose **Equipment Module** > **Cisco NI1 DSLAM Equipment Module** > **Cisco NI1 ATM-ATM Cross-Connect Profile >** *Service Element Profile.*

Step 2   Click the Delete button on the toolbar.

Step 3   Apply the Transaction by clicking the **Apply** button on the toolbar.

DSL Physical Port Profile Attributes

The DSL physical port profile provides you with access to the additional attributes that you can configure for a Cisco 6100/6130 DSL physical port. The information you provide in the physical port profile is communicated back to the Cisco 6100/6130 through the Equipment Module and helps to define the type of service you are provisioning in the network.

Figure 6-1 shows the Cisco 6100/6130 DSL Physical Port Profile Object Viewer.

Figure 6-1   Cisco 6100/6130 DSL Physical Port Profile Object Viewer

Table 6-4 lists the configurable attributes for a Cisco 6100/6130 DSL physical port profile. Attributes with an asterisk "*" next to their Default Value indicates that these fields should not be changed.

Table 6-4   Cisco 6100/6130 DSL Physical Port Profile Attributes

Attribute	Description	Acceptable Values	Default Value
Common Attributes			
Name	The DSL physical port profile name.	Text string (up to 24 characters)	
Customer	The customer name.	Text string (up to 16 characters)	
Domain	The domain name.	Text string (up to 16 characters)	
Port Type	The DSL physical port type.	SDSL, ADSL	ADSL
Subscriber ID	The subscriber ID for this physical port object.	Text string (up to 32 characters)	
Class	The CPC class name for this physical port.	C1dp	C1dp*
Service Object ID	The Service Object identification number that owns this port.	Text string (up to 44 characters)	*
Protocol	The protocol supported by this physical port.	DSL	DSL*
Incoming Bandwidth (kbits/s)[1]	Specify the provisioned incoming bandwidth.	0-2147483647	0
Outgoing Bandwidth (kbits/s)[1]	Specify the provisioned outgoing bandwidth.	0-2147483647	0
AZ signal-to-ratio margin	The AZ signal-to-noise-ratio margin. The higher this margin is set, the more protection there is against data corruption. Higher margins support lower data rates for the given loop.	0-120	60
ZA signal-to-ratio margin	The ZA signal-to-noise ratio margin. The higher this margin is set, the more protection there is against data corruption. Higher margins support lower data rates for a given loop.	0-120	30
Rate adaptation mode	Specify the rate adaptation mode for the physical port.	Startup, Fixed, Dynamic	Startup

Table 6-4   Cisco 6100/6130 DSL Physical Port Profile Attributes (continued)

Attribute	Description	Acceptable Values	Default Value
Cisco 6100/6130			
Modem Card Type	The modem card type (line card type) that contains this physical port	CAPADSL, DMT2ADSL, 2B1QSDSL	CAPADSL
Modem Card Subtype	The modem card subtype. This attribute provides support for FLEX cards. If a FLEX card is present, it will be set to 4xFLEX and if a FLEX card is not present, it will be set to Other. This attribute is uploaded and cannot be changed.	4xFLEX, Other	*
DSL Port Type	Specify the physical port type.	ModemPort, Line Port	ModemPort
Connection Time-out	This is the provisioned connection timeout (according to timer type specified). This parameter can only be modified when the subscriber object is locked.	1-240	1
ATU-C DMT-2			
Bit Swapping	Enabling this attribute allows the modem to that the subscriber is connected to utilize bit swapping (if capable). This will allow it to acknowledge bit swap requests from the far end and to request bit swapping when necessary.	Enabled, Disabled	Disabled
Trellis Code	Enabling this attribute allows trellis coding to be used in both upstream and downstream directions. If neither the modem supports trellis coding, the link will revert to no trellis coding (i.e., trellis coding must be used in both directions if it is to be used).	Enabled, Disabled	Enabled
FEC Redundancy Bytes	This is the number of forward error checking coding bytes to be included in the ADSL superframe. This value will be used in both the upstream and downstream directions, and on both fast and interleaved paths.	0,2,4,6,8,12,14,16	16
Interleaved Delay (usec)	The delay on the interleaved path, in both the upstream and downstream directions.	0,250,500,1000, 2000,4000, 8000, 16000, 32000, 64000	16000

Table 6-4   Cisco 6100/6130 DSL Physical Port Profile Attributes (continued)

Attribute	Description	Acceptable Values	Default Value
Training Mode	The training mode for the physical port. In standard mode, the modem attempts to train using the method specified by T1.413 Issue 2. FastTrain mode is a proprietary, optimized training algorithm that works only if both the near and far end modems are based on mutually compatible chipsets. If this is not the case, training results are unpredictable. The value of this attribute will apply to both upstream and downstream directions.	Standard, Fast Train	Standard
G.lite Mode	This attribute is only applicable to 4 port FLEX cards. G.lite mode is enabled on a per board basis so all ports in the same board should have the same value for this attribute. If Enabled is selected, the modem that the subscriber is connected to will run in G.lite mode. The board should be reset after enabling this attribute. Enabling this object will reset the following attributes to their default values; Interleaved Delay, Overhead Frame, Incoming Bandwidth and Outgoing Bandwidth.	Enabled, Disabled	Disabled
Overhead Frame	The overhead framing structure requested for the modem that the subscriber is connected to. If the far end modem does not support this structure, the near end will fall back to the highest number that the far end supports. The same framing structure must be used in both directions.	ReducedMerged Fast, Reduced SeparateFast, FullAsynch.,Full Synch	Reduced MergedFast

Table 6-4   Cisco 6100/6130 DSL Physical Port Profile Attributes (continued)

Attribute	Description	Acceptable Values	Default Value
ATU-C CAP			
CPE Signature	This attribute specifies a CPE software signature (which corresponds to a specific version). If the Allow CPE's Signature Detection attribute is Enabled, then any CPE having a software signature lower than this value will not be allowed to train. A value of zero implies that no rejection will occur.	0-127	0
Allow CPE's Signature Detection	This attribute controls the detection and enforcement of minimum compatible software levels when the modem port that the subscriber is connected to trains to the CPE at the far end. If this attribute is Enabled, the modem port retrieves the software signature during the training sequence. If disabled, the software signature provided by the far end CPE is ignored and the training sequence is allowed to continue as normal.	Enabled, Disabled	Disabled
Allow 136K Baud (Downstream)	Enabling this attribute allows modems to use the 136K baud rate when attempting to train at the requested upstream and downstream rates (incoming/outgoing bandwidth). If this attribute is Disabled, the 136K baud rate will not be used in the training algorithm. If the subscriber is provisioned for rates that require 136K baud, the modem will attempt to train at the closest rate combination not using 136K baud.	Enabled, Disabled	Disabled

Table 6-4   Cisco 6100/6130 DSL Physical Port Profile Attributes (continued)

Attribute	Description	Acceptable Values	Default Value
Reed Solomon	Reed Solomon error encoding can be configured for the ATU-C running in CAP mode. Short interleave, sets the interleave depth to a smaller value and Long interleave sets it to a higher value. Disabling 136K baud will disable Reed Solomon error correction for 136K baud rates in the downstream direction. For all other baud rates, Reed Solomon error correction is permanently enabled.	Short interleave, Long interleave, Disable 136K Baud	Short Interleave
Allow 17K Baud (Upstream)	When this attribute is enabled, ATU-C will include the line rates corresponding to this baud rate and also for line rate selection. This attribute is only valid when the line encoding type is CAP. If the value of the line encoding type is different, changing the value of this attribute will have no effect. This baud rate is used only in the upstream direction.	Enabled, Disabled	Disabled
Allow 68K Baud (Upstream)	When this attribute is enabled, ATU-C will include the line rates corresponding to this baud rate and also for line rate selection. This attribute is only valid when the line encoding type is CAP. If the value of the line encoding type is different, changing the value of this attribute will have no effect. This baud rate is used only in the upstream direction.	Enabled, Disabled	Disabled
Upstream PSD Transmit Power (dBm/Hz)	Specifies the nominal power output of an xDSL modem in the upstream (xTU-R toward xTU-C) direction, across the entire transmit spectrum. For certain data rates this may imply an attenuation of the transmitted signal. This value can be specified in increments of 3 dBm/Hz. This attribute reflects the actual power output of an xDSL modem that has been trained.	-38, -41, -44, -47, -50, -53	-38

Table 6-4   Cisco 6100/6130 DSL Physical Port Profile Attributes (continued)

Attribute	Description	Acceptable Values	Default Value
Other Attributes			
Downstream PSD Transmit Power (dBm/Hz)	Specifies the nominal power output of an xDSL modem in the downstream (xTU-C toward xTU-R) direction, across the entire transmit spectrum. For certain data rates this may imply an attenuation of the transmitted signal. This value can be specified in increments of 3 dB/Hz. This attribute reflects the actual power output of an xDSL modem that has been trained.The -34 value is not applicable to CAP ADSL.	-34, -37, -40, -43, -46, -49	-40

1. Bandwidth values differ according to the modem card type. For the DMT ADSL modem type, the outgoing bandwidth follows the pattern (32,64,96, 128... ...786,800,832,864) and the incoming bandwidth follows the pattern (32,64,96, 128... ...7904, 7968,8000). For the 2BIQSDSL modem type, the outgoing and incoming bandwidths follows the pattern (144,272,400,528,784,1040,1168). Specified rates that fall between the minimum and the maximum are always round up to the next valid value.

ATM Logical Port Profile Attributes

The ATM logical port profile provides you with access to the ATM attributes that you can configure for an ATM logical port. If you do not create logical port profiles, the Equipment Module will communicate the values specified in the default logical port profile.

Figure 6-2 shows a Cisco 6100/6130 ATM Logical Port Profile Object Viewer.

Figure 6-2   Cisco 6100/6130 ATM Logical Port Profile Object Viewer

Table 6-5 lists the configurable attributes for a Cisco 6100/6130 ATM logical port profile. Attributes marked with an asterisk "*" next to their Default Value indicates that these fields should not be changed.

Table 6-5   Cisco 6100/6130 ATM Logical Port Profile Attributes

Attribute	Description	Acceptable Values	Default Values
Common Attributes			
Name	The logical port profile name.	Text string (up to 24 characters)	
Customer	The customer name.	Text string (up to 16 characters)	
Domain	The domain name.	Text string (up to 16 characters)	
Protocol	The protocol used by this logical port.	Text string (up to 10 characters)	ATM*
Signalling Role	The DTE logical port type communicates with most ATM CPEs. This logical port type supports all types of PVCs.	DCE, DTE	DCE
NNI Enable	This feature is not supported in this release.	TRUE, FALSE	FALSE*

Table 6-5   Cisco 6100/6130 ATM Logical Port Profile Attributes (continued)

Attribute	Description	Acceptable Values	Default Values
Administrative Status	Specify the administrative status of the logical port.	Unlocked, Locked	Unlocked
Maximum Connections	Specify the maximum number of connections supported for the logical port.	0-2147483647	4 for DSL physical ports, 11304 for WAN physical ports, 3776 for WAN subtending ports.
Service Object ID	The Service object ID that owns this Service element.	Text string (up to 44 characters)	*
Class	The CPC class for this logical port object.	C1al	C1al*
Resource Map	ATM-ATM PVC connections are supported.	0-2147483647	48
Peer Logical Port	The peer logical port *(nodename/portname)*.	Text string (up to 40 characters)	
QoS	The quality of service provided by this logical port.	Text string (up to 32 characters)	UBR
Group	The logical port group membership. Allows several logical ports to be put in a common group as a pooled resource. This attribute is not applicable to this Equipment Module.	Text string (up to 32 characters)	*
Priority	The logical port usage priority.	0-2147483647	0

Table 6-5   Cisco 6100/6130 ATM Logical Port Profile Attributes (continued)

Attribute	Description	Acceptable Values	Default Values
Multiple Ranges	Specify whether or not to enable or disable multiple ranges.	TRUE, FALSE	FALSE
EMS Name	The name of the logical port used in the Element Management System.	Text string (up to 65 characters)	*
Bandwidth			
Incoming Maximum (kbits/s)	The maximum incoming bandwidth for the logical port.	0-2147483647	*
Outgoing Maximum (kbits/s)	The maximum outgoing bandwidth for the logical port.	0-2147483647	*
Incoming Nominal Threshold (%)	Specify the incoming committed bandwidth nominal threshold percentage.	0-2147483647	100
Outgoing Nominal Threshold (%)	Specify the outgoing committed bandwidth nominal threshold percentage.	0-2147483647	100
Incoming Committed (kbits/s)	The incoming committed bandwidth is auto-calculated based on the nominal threshold and bandwidth.	0-2147483647	0*
Outgoing Committed (kbits/s)	The outgoing committed bandwidth is auto-calculated based on the nominal threshold and bandwidth.	0-2147483647	0*
ATM Attributes			
VPI ILMI ID	The ILMI ID for the VPI.	0-2147483647	0
Max VCI bits	The maximum VPI bits (local).	0-255	8
VCI ILMI ID	The ILMI ID for the VCI.	0-2147483647	0
Max VCI bits	The maximum VCI (local).	0-1599	14

Table 6-5   Cisco 6100/6130 ATM Logical Port Profile Attributes (continued)

Attribute	Description	Acceptable Values	Default Values
Local Management Interface			
Management Protocol	Specify the management protocol that will be used to manage the logical port.	None, ILMI	None
Attributes			
srchanmap	This attribute is not supported in this release	Text string (up to 38 characters)	

ATM-ATM Cross Connection Service Element Profile Attributes

The ATM-ATM Cross Connection Service element profile provides you with access to the additional attributes that you can configure for a Cisco 6100/6130 ATM Cross Connect service through the Cisco 6100/6130 DSLAM. The ATM cross-connection object represents a cross connect between two ATM logical ports in the same node. This Service object can be a VC between a DSL port and a Network Interface (NI) port and also between subtending NI ports. The information you provide in the Service element profile is communicated to the Cisco 6100/6130 DSLAM through the Equipment Module and helps to define the type of service you are provisioning in the network. If you do not create Service element profiles, the Equipment Module will communicate the values specified in the default Service element profile.

Figure 6-3 shows the Cisco 6100/6130 ATM-ATM Cross-Connection Profile Object Viewer.

Figure 6-3   Cisco 6100/6130 ATM-ATM Cross Connection Profile Object Viewer

Table 6-6 lists the configurable attributes for a Cisco 6100/6130 ATM-ATM cross connections. Attributes marked with an asterisk "*" next to their Default Value indicates that these fields should not be changed.

Table 6-6   Cisco 6100/6130 ATM-ATM Cross Connection Profile Attributes

Attribute Name	Description	Acceptable Values	Default Value
Common Attributes			
Name	The cross connection profile name.	Text string (up to 24 characters)	
Customer	The customer name.	Text string (up to 16 characters)	
Domain	The domain name.	Text string (up to 16 characters)	
Recovery Priority	This is not supported in this release.	0...n where 0 indicates that the service should not be moved, 1 is the highest priority and n is the lowest priority	0
UNI Recovery Priority	The recovery priority for UNI resiliency.	0...n where 0 indicates that the service should not be moved, 1 is the highest priority and n is the lowest priority	1
Service Object ID	The service object ID for the cross connection.	Text string (up to 44 characters)	
A Endpoint VCI[1]	The VCI for the subscriber or transit subscriber side of the 6100/6130 switching fabric.	0-1599	0
A Endpoint VPI[1]	The VPI for the subscriber or transit subscriber side of the 6100/6130 switching fabric.	-1-255	-1
Z Endpoint VCI[1]	The VCI for the network side of the 6100/6130 switching fabric.	0-1599	0
Z Endpoint VPI[1]	The VPI for the network side of the 6100/6130 switching fabric.	-1-255	-1
ATM Attributes			
Circuit Type	The circuit type.	VC, VP	VC*
Class of Service	You can specify the class of service for traffic. The class of service determines which traffic descriptor you can select.	UBR	UBR*

Table 6-6   Cisco 6100/6130 ATM-ATM Cross Connection Profile Attributes (continued)

Attribute Name	Description	Acceptable Values	Default Value
A to Z, Z to A Directions			
Bandwidth (kbits/s)	The bandwidth for the cross connection.	0-214783647	0
Primary Logical Port	The original logical port that is being backed up by the he UNI resiliency *(nodename/portname)*.	Text string (up to 44 characters)	
Substainable Cell Rate (cells/s)	SCR is the maximum average cell transmission rate that is allowed over a given period of time on a given circuit. It allows the network to allocate sufficient resources for guaranteeing the network performance objectives are met.	0-910533065	0
Peak Cell Rate (cells/s)	PCR is the maximum allowed cell transmission rate. It defines the shortest time period between cells and provides the highest guarantee that network performance objectives (based on cell loss ratio) will be met.	0-910533065	0
Maximum Burst Size (cells)	MBS is the maximum number of cells that can be received at the PCR. This allows a burst of cells to arrive at a rate higher than the SCR. If the burst is larger than anticipated, the additional cells are tagged or dropped. This parameter applies only to VBR traffic.	0-214783647	0
Cisco 6100/6130			
Subscriber PVC Path	Specify whether or not the subscriber PVC is interleaved or fast.	Fast, Interleaved	Interleaved
The Priority Queue	The priority queue to which the PVC is assigned. The highest priority is QP1.	QP1, QP2, QP3	QP3

1. The following is a summary of VPI/VCI allocation within the Cisco 6100/6130:

DSL physical port: VPI (1), VCI (0-3); Subtending port: VPI (0-6), VCI (32-399) used for Virtual Channel Connection (VCCs); VPI (7-255) used for Virtual Path Connections (VPCs); these are reserved for future use; WAN physical port: VPI(0-27), VCI (32-399) used for VCCs, VPI (28-255) used for VPCs; these are reserved for future use.